

Name: _____

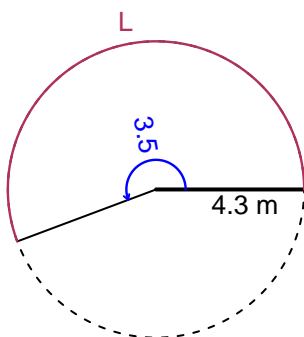
Date: _____

Trig Final (TEST v652)

- You should have a calculator (like [Desmos](#)) and a [unit-circle](#) reference sheet.

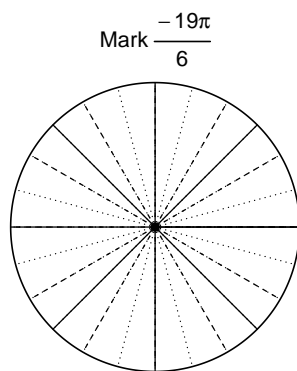
Question 1

In the figure below, we see a circle and a central angle that subtends an arc. The radius is 4.3 meters. The angle measure is 3.5 radians. How long is the arc in meters?

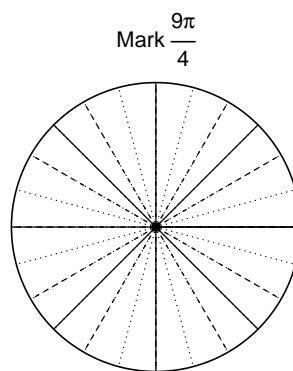


Question 2

Consider angles $-\frac{19\pi}{6}$ and $\frac{9\pi}{4}$. For each angle, use a spiral with an arrow head to **mark** the angle on a circle below in standard position. Then, find **exact** expressions for $\sin\left(-\frac{19\pi}{6}\right)$ and $\cos\left(\frac{9\pi}{4}\right)$ by using a unit circle (provided separately).



Find $\sin\left(-\frac{19\pi}{6}\right)$



Find $\cos\left(\frac{9\pi}{4}\right)$

Question 3

If $\tan(\theta) = \frac{-15}{8}$, and θ is in quadrant IV, determine an exact value for $\cos(\theta)$.

Question 4

A mass-spring system oscillates vertically with a frequency of 2.14 Hz, a midline at $y = -8.58$ meters, and an amplitude of 4.22 meters. At $t = 0$, the mass is at the midline and moving down. Write an equation to model the height (y in meters) as a function of time (t in seconds).